UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,720	08/25/2003	Joseph H. Lyons	1857.2030000	9846

28393 7590 12/13/2005

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVE., N.W.
WASHINGTON, DC 20005

EXAMINER	
CYGAN, MICHAEL T	

ART UNIT	PAPER NUMBER
2855	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/646,720	LYONS, JOSEPH H.	
	Examiner	Art Unit	
	Michael Cygan	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19-33* is/are pending in the application.

4a) Of the above claim(s) *26-33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Newly submitted claims 26-38 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: applicant has previously chosen to direct prosecution towards the method claims 19-25, offering detailed argument based upon the sensitivity advantages of the nozzle shapes. The added claims, while similar to previously submitted (and previously cancelled) claims, diverge from that focus in such a substantial manner as to cause a significant burden to examination. Claims 26-38 are properly restrictable as detailed below:

I. Claims 19-24, drawn to method of using probes, classified in class 73, subclass 37.5.

II. Claims 26-33, drawn to apparatus comprising mass flow sensor, classified in class 73, subclass 37.

III. Claims 34-38, drawn to method of proximity sensing mass flow between probes, classified in class 73, subclass 37.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as

claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the method can be used with non-mass-flow sensing.

Inventions I and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because I does not require mass flow sensing. The subcombination has separate utility such as performing proximity sensing absent determination of topography of the surfaces.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Groups II and III, restriction for examination purposes as indicated is proper. No restriction is here performed between the added claims (i.e., between Groups II and III).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 26-33 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barada (US 4,953,388) in view of Carraras (US 4,604,892). Barada teaches an air gauge sensor comprising dividing portion [32], reference channel [42], measurement channel [40], flow restrictors [44,46] in both channels, mass flow sensor [50] coupled to both channels and to a controller (Figure 2), and a mass flow controller [20] coupled to a filter [30] acting as a snubber; see entire document, especially Figure 1. Barada teaches the method for proximity sensing with the abovedescribed apparatus; see abstract and column 3. Barada teaches the claimed invention except for an elongated orifice, particularly having the claimed dimensions. With respect to the "such that...low sensitivity areas", the specification reveals this advantage to flow from either the matching of the orifice footprint to the surface features (paragraph 0048), or to the elongated dimensions of the nozzles (paragraph 0023).

Carreras teaches the use of a rectangular orifice having a shape homothetic of that of the deposit to be measured; see Figure 4 lines 6-9 and Figures 1 and 5. It would have been obvious to one having ordinary skill in the

art at the time the invention was made to use a rectangular orifice as taught by Carreras in the invention taught by Barada to form the orifices, since Carreras teaches that this "essential feature" allows the equivalent of a volume to be measured; see column 4 lines 6-9.

With respect to the ranges of dimension claimed, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

2. Claims 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barada (US 4,953,388) in view of Zumbach (US 3,948,082). Barada teaches an air gauge sensor comprising dividing portion [32], reference channel [42], measurement channel [40], flow restrictors [44,46] in both channels, mass flow sensor [50] coupled to both channels and to a controller (Figure 2), and a mass flow controller [20] coupled to a filter [30] acting as a snubber; see entire document, especially Figure 1. Barada teaches the method for proximity sensing with the abovedescribed apparatus; see abstract and column 3. Barada teaches the claimed invention except for an elongated orifice, particularly having the claimed dimensions. With respect to the "such that...low sensitivity areas", the specification reveals this advantage to flow from either the matching of the orifice footprint to the surface features

(paragraph 0048), or to the elongated dimensions of the nozzles (paragraph 0023).

Zumbach teaches the use of a longitudinal sensing slit [34] for measuring air gaps; see column 8 and Figure 4. It have been obvious to one having ordinary skill in the art at the time the invention was made to use a rectangular orifice as taught by Zumbach in the invention taught by Barada to form the orifices, since Zumbach teaches that this eliminates the need for exact lateral guidance, since the air gap is in the form of a homogeneous field; see column 8 lines 60+.

With respect to the ranges of dimension claimed, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barada (US 4,953,388) in view of Carraras (US 4,604,892) as applied to claim 19, further in view of Nemeth (US 5,317,898). The claimed invention is considered to be taught except for the use of a flat metal plate which holds the measured substrate as a reference surface. Nemeth teaches the use of a flat metal plate which holds the measured substrate as a reference surface (Figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a flat

supporting plate as taught by Nemeth in the invention taught by Barada to detect thickness, since this would reduce measurement error from outside sources (i.e., sources affecting surface 66, but not 68). Using the supporting surface as the reference is desirable as further taught by Nemeth at column 2 lines 25-53.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barada (US 4,953,388) in view of Zumbach (US 3,948,082) as applied to claim 19, further in view of Nemeth (US 5,317,898). The claimed invention is considered to be taught except for the use of a flat metal plate which holds the measured substrate as a reference surface. Nemeth teaches the use of a flat metal plate which holds the measured substrate as a reference surface (Figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a flat supporting plate as taught by Nemeth in the invention taught by Barada to detect thickness, since this would reduce measurement error from outside sources (i.e., sources affecting surface 66, but not 68). Using the supporting surface as the reference is desirable as further taught by Nemeth at column 2 lines 25-53.

Response to Arguments

Applicant's arguments filed 03 November 2005 have been fully considered but they are not persuasive. Applicant attempts to distinguish the claimed invention from the teachings of the applied references by emphasizing the importance of the claimed "substantially eliminating low sensitivity areas." Applicant explains this phrase by

reference to Figures 4 and 6 of the instant application. Figure 6 exemplifies the prior art, in which a low sensitivity area [602] is formed due to the nozzle structure [600,604]. Figure 4 shows applicant's improvement, a nozzle shape having no low sensitivity areas (except at the edges of the nozzle). Carrerras' Figure 2 shows sensitivity profiles of rectangular and square shaped nozzles. For each of the shapes, the sensitivity remains high over the entire area of the nozzle (except, like applicant's shape, at the edges of the nozzle). Zumbach's Figure 4 shows a similar rectangular nozzle shape; it can be seen that such a nozzle would inherently have the same sensitivity properties as any other nozzle having the same shape (such as applicant's generally claimed invention of claims 19 and 20).

While the perspective drawings of both Carerras and Zumbach make determination of the disclosed dimensions difficult, they generally disclose rectangular nozzles in the area of a 1:2 to a 1:20 dimension. Since the specification does not disclose any criticality of the claimed ranges, and since the prior art generally discloses the claimed dimensions, claims 21-24 are found obvious over the applied references.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cygan whose telephone number is (571) 272-2175. The examiner can normally be reached on 8:30-6 M-Th, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MICHAEL CYGAN, PH.D.
PRIMARY EXAMINER